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ABSTRACT

Past research has produced conflicting results concerning the manner in which Type As and Bs make attributions following success and failure. Some studies find that Type As are more likely than Type Bs to blame themselves for all outcomes, particularly failure. Other research indicates that Type As are more self-serving in their post-performance attributions. Research indicating more self-blame by Type As typically uses a causal source approach, that is, subjects are asked to indicate the extent to which common causal sources (e.g., ability, effort) produced the outcome. Assumptions are then made about the causal dimensions (e.g., internality, stability) that underlie the attributions. The causal dimension approach, used in studies that find Type As to be more self-serving than Type Bs, assesses the dimensional structure of causes directly. One possible explanation for the divergence in results is that Type As and Bs differ in their interpretations of the dimensional structure underlying common causal sources, with Type As interpreting those causes in a more self-serving manner. To test this hypothesis, 76 undergraduates classified as either Type As or Type Bs were induced to succeed or fail at anagram solving problems and then completed an attribution scale where the causal sources of ability and effort were rated on three dimensions (internality, stability, generality). Results provided support for the hypothesis in that Type As interpreted the dimensional structure of ability and effort differently than did Type Bs and in ways that were more self-serving. (Author/NB)

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Performance Attributions and the Type A

Behavior Pattern: Causal Sources

Versus Causal Dimensions

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Running head: PERFORMANCE ATTRIBUTIONS AND TYPE A BEHAVIOR

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Running head: PERFORMANCE ATTRIBUTIONS AND TYPE A BEHAVIOR

Abstract

Past research has produced conflicting results concerning the manner in which Type As and Bs make attributions following success and failure. Some studies find that Type As are more likely than Type Bs to blame themselves for all outcomes, particularly failure. Other research indicates that Type As are more self-serving in their post-performance attributions. Research indicating more self-blame by Type As typically uses a causal source approach, that is, subjects are asked to indicate the extent to which common causal sources (e.g., ability, effort) produced the outcome. Assumptions are then made about the causal dimensions (e.g., internality, stability) that underlie the attributions. The causal dimension approach, used in studies that find Type As to be more self-serving than Type Bs, assesses the dimensional structure of causes directly. One possible explanation for the divergence in results is that Type As and Bs differ in their interpretations of the dimensional structure underlying common causal sources, with Type As interpreting those causes in a more self-serving manner. To test this hypothesis, subjects were induced to succeed or fail and then completed an attribution scale where the causal sources of ability and effort were rated on three dimensions (internality, stability, generality). Results provided support for the hypothesis: Type As interpreted the dimensional structure of ability and effort differently than did Type Bs and in ways that were more self-serving.

Performance Attributions and the Type A Behavior Pattern:

Causal Sources versus Causal Dimensions

Research conducted during the past several years has begun to identify the psychological underpinnings of the Type A and B behavior patterns (for a review, see Matthews, 1982). These efforts are critical because an understanding of the psychological differences between Type As and Bs will ultimately be necessary for a complete account of the Type As' enhanced coronary risk (for reviews, see Dembroski et al., 1978; Glass, 1977; Matthews & Haynes, 1986; Review Panel, 1981; Wright, Contrada, & Glass, 1985). Moreover, researchers have begun to demonstrate the moderating role of Type A behavior in a wide range of social psychological phenomena (e.g., Becker & Byrne, 1984; Sanders & Malkis, 1982), further underscoring the need for a clear understanding of the underlying psychological processes. Because the Type A pattern is a style of reacting to environmental stimuli, one important area to examine is the ways that Type As and Bs differ in their inferences about events in the environment. Of particular interest are the attributions that Type As and Bs make about their own performances. If Type As and Bs differ in the inferences they make about objectively similar performances, then their reactions to those events in terms of perceived stress and future coping may differ as well. The purpose of the present study was to propose and test an explanation for the contradictory findings that currently

characterize the literature on performance attributions among Type As and Bs. More generally, this study attempted to demonstrate the importance of distinguishing between two prevalent methods for assessing performance attributions.

Several attempts have been made to examine the performance attributions made by Type As and Bs. One of the first attempts was conducted by Brunson and Matthews (1981) who exposed Type As and Bs to unsolvable concept formation problems under conditions of high and low salience.¹ During the task, subjects were required to verbalize their ongoing thoughts, which were coded for attributional content. After the task, subjects assigned the percentage of responsibility for their success on training trials, and failure on the actual task, to five causal sources: ability, effort, task difficulty, luck, and the experimenter. Results indicated that during the task, Type As were more likely than Type Bs to blame their failure on ability when failure was highly salient, whereas Type Bs were more likely than Type As to blame their failure on task difficulty under moderate salience. A simpler pattern emerged for post-performance attributions. Regardless of salience, Type As were more likely than Type Bs to assign responsibility for both success and failure to ability and effort, whereas Type Bs were more likely than Type As to assign responsibility to task difficulty, chance, and the experimenter. These results suggest that Type As are more likely than Type Bs to hold themselves responsible for all events (positive and

negative).²

A partial replication of the results reported by Brunson and Matthews (1981) has been obtained by Musante, MacDougall, and Dembroski (1984). Musante et al. had subjects play a video game against another subject of roughly equal ability. Following the game, subjects rated the degree to which ability, effort, task difficulty, and luck helped or hindered performance. Results indicated that Type As and Bs did not differ in their attributions following success, but Type As were more likely than Type Bs to claim that ability hindered performance following failure. A similar pattern of means was obtained for effort attributions, although the differences were not reliable.³ Taken together, the Brunson and Matthews (1981) study, and the Musante et al. (1984) study, suggest that Type As may be more likely than Type Bs to accept responsibility for their performance outcomes, particularly following failure. If so, this perceptual difference might account for the greater physiological responses to failure and control loss exhibited by Type As (see Contrada, Wright, & Glass, 1985; Wright, Contrada, & Glass, 1985), and the poorer performance outcomes exhibited by Type As following extensive, salient loss of control (i.e., learned helplessness, see Brunson & Matthews, 1981, Glass, 1977).

A different pattern of attributional findings has been obtained by Strube and Boland (1986), however. Type As and Bs were induced to fail or succeed on a series of anagram problems

that were described as measuring an important cognitive ability. After the task, attributions were assessed by having subjects specify the major cause for performance, and then having subjects rate that cause on scales measuring internal-external, stable-unstable, global-specific, and controllable-uncontrollable dimensions. Results indicated that Type As accepted more responsibility for success than did Type Bs, but accepted less responsibility for failure. In other words, the post-performance attributions of Type As were distinctly more self-serving than the post-performance attributions of Type Bs. Similar results have been obtained by Strube, Boland, Manfredo, and Al-Falaij (in press).

Strube et al.'s findings are also consistent with the documented differences between Type As and Bs in their physiological responses and performance outcomes following extensive failure. The achievement and success orientation of Type As should lead them to expect more success than Type Bs. Accordingly, Type As should find actual success to be more consistent with expectations, and failure to be less consistent with expectations. Research indicates that unexpected outcomes are more likely to be attributed to external factors than internal factors (e.g., Feather & Simon, 1971a, 1971b; Lau & Russell, 1980). But, because failure is more unexpected for Type As than for Type Bs it should be more alarming and more likely to result in heightened stress for Type As.

Because the nature of the attributions made by Type As and Bs is central to understanding their responses to stress, it is critical that the current contradiction in results be resolved. Close inspection of the methods used in past studies suggests a possible solution. Brunson and Matthews (1981) and Musante et al. (1984) provided subjects with specific causal sources (i.e., ability, effort, etc.) and asked them to indicate the degree to which each source contributed to the performance outcome. An inherent limitation of this approach is that the investigator must make assumptions about the causal structure of the sources in order to make sense out of the data. For example, ability is assumed to be an internal, stable causal source whereas effort is assumed to be internal and unstable. Yet it is entirely possible that subjects may diverge from investigators in their assumptions about the dimensional structure of causal sources (see Krantz & Rude, 1984). Indeed, past research indicates that typical assumptions about the causal location of common sources are often in error (see Betancourt & Weiner, 1982; Meyer & Koelbl, 1982; Ronis, Hansen, & O'Leary, 1983; Russell, 1982), that different situations produce a preference for different causal sources (Anderson, 1983), and that the nature of the situation may shift the meaning of causal sources. For example, effort and task difficulty have been found to vary in their assumed stability (Elig & Frieze, 1979; Meyer, 1980; Ostrove, 1978; Valle & Frieze, 1976; Weiner, 1979). Likewise luck has been found to shift along

the internal-external dimension (Meyer, 1980; Weiner, Nierenberg, & Goldstein, 1976). Thus there appear to be wide individual and situational differences in the meaning of causal sources (see Krantz & Rude, 1984). In the present context, these findings suggest that the discrepant results obtained with Type As and Bs may stem from systematic differences in the way Type As and Bs interpret the causal structure of common causal sources.

The present study examined the dimensional assumptions underlying Type As' and Bs' use of common attributional sources. The previously discussed research would be entirely consistent if two results could be demonstrated: (a) Type As and Bs have fundamentally different interpretations of the dimensional structure that underlies common causal sources, and (b) when these different interpretations are taken into account, Type As' use of common causal sources can be shown to be more self-serving than that exhibited by Type Bs.

In the present study, Type As and Bs were induced to succeed or fail, and then were asked to indicate the degree to which ability and effort contributed to the outcome. Ability and effort were examined because these are the sources that have revealed consistent Type A-B differences in past research. More importantly, Type As and Bs were also asked to indicate the location of these causal sources along three commonly used attributional dimensions: internal-external, stable-unstable, and global-specific. Primary interest was in the use of the

internal-external and stable-unstable dimensions. These are the dimensions that have received the most attention in discussions of causal structure (e.g., Abramson, Garber, & Seligman, 1980; Weiner, 1972, 1974). The global-specific dimension has been used in research with the reformulated learned helplessness model (see Abramson et al., 1980) and studies examining attributional style among Type As and Bs (e.g., Rhodewalt, 1984; Strube, 1985).

Support for the hypotheses would be apparent if (a) Type As were more likely than Type Bs to claim that ability and/or effort hindered their performance following failure, and (b) Type As were less likely than Type Bs to claim that ability and effort were internal and stable characteristics following failure. By contrast, Type As should be more likely than Type Bs to perceive ability and effort as internal, stable characteristics following success.

Method

Subjects

Subjects were 76 undergraduate volunteers (37 males, 39 females) who participated in exchange for \$4.00. Average age of the subjects was 20.6.

Procedure

Subjects participated in a study ostensibly designed to examine cognitive abilities among college students. Subjects were told that a variety of cognitive abilities contribute to success in college and that the study would attempt to determine if one

such ability, mental flexibility, was related to a person's personality, age, and sex. Prior to beginning the mental flexibility test, subjects were asked to complete the Jenkins Activity Survey (Form T), a student-adapted measure of the Type A behavior pattern (Krantz, Glass, & Snyder, 1974). The Jenkins Activity Survey (JAS) consists of 21 items that describe typical Type A behaviors and require subjects to indicate the degree to which they typically act in such a fashion. Items are unit scored yielding a possible score range of 0 to 21. Obtained scores ranged from 2 to 17 with a median of 6.75, a distribution similar to that reported in other research (e.g., Glass, 1977). Subjects scoring above the sample median were classified as Type As whereas those scoring below the sample median were classified as Type Bs. It is important to note that a key issue in the Type A literature is the only modest agreement in classification of different measures of Type A behavior, most notably the JAS and the Structured Interview (SI) (see Matthews, 1982; Matthews, Krantz, Dembroski, & MacDougall, 1982; Musante, MacDougall, Dembroski, & Van Horn, 1983). Although both have been found to be predictive of coronary disease (Brand, 1978; Matthews & Haynes, 1986; Zyzanski, 1978), the relation is stronger in the case of the SI and the two measures appear to tap somewhat nonoverlapping aspects of the pattern (in addition to commonly measured features). Accordingly, generalizations from research using either method must be made with caution. Choice of the JAS was

governed by two major considerations. First, past research examining performance attributions has used the JAS as the means for subject classification. Any attempt to reconcile the contradictory findings in this area should not deviate from the measurement paradigms used in past research. Second, empirical evidence indicates that the JAS appears to tap primarily cognitive/perceptual factors that are more related to psychological processes than the physiological reactivity primarily assessed by the SI (for more extensive discussions, see Matthews, 1982; Strube, in press).

Mental flexibility was described as the ability to rapidly manipulate stimuli mentally in an efficient manner. Accordingly, the mental flexibility test consisted of 5 sets of 8 anagrams, and subjects were told that they would have 4 minutes to solve each set. An example of a solved anagram set was provided, and the experimenter noted that to solve an entire set in the allotted time required subjects to manipulate the letters mentally (subjects could not write possible letter combinations on the test form), to keep track of previously attempted solutions, and to conduct such operations quickly. Subjects were told that, on the average, college students could solve between 4 and 5 anagrams per set within 4 minutes. In fact, subjects were randomly assigned to attempt either easy or difficult anagrams. Pilot testing indicated that the easy anagrams would ensure that subjects solved substantially more than 4.5 anagrams per set whereas the difficult

anagrams ensured that subjects would solve substantially fewer than 4.5 anagrams per set. All anagrams were 5 letters in length. Examples of easy anagrams are OKCLC (CLOCK) and NATLP (PLANT). Examples of difficult anagrams are EEVUN (VENUE) and CTISO (STOIC).

After completing the anagram sets, subjects were given an attributional questionnaire designed to assess the dimensional structure of their use of the common attributional sources of ability and effort. For each of these sources, subjects indicated (on 7-point scales) the degree to which the cause helped or hindered performance, and the extent to which (a) the cause was totally due to something about them or totally due to other people or external circumstances (i.e., internality dimension), (b) the cause was likely to change over time (stability dimension), and (c) the cause was specific to the anagram task or affected other aspects of the subject's life (generality dimension). Subjects also indicated the extent to which the cause was important relative to all other causes for performance. Finally, subjects were asked to indicate their perceptions of the level of their performances, and to indicate their satisfaction with their performances. These ratings were made on 7-point scales and were used to check on the quality of the manipulations.

After completing the attributional questionnaire, subjects were thoroughly debriefed and excused.

Results

Preliminary analyses indicated the absence of sex differences, thus results reported below are collapsed across sex of subject. Unless otherwise indicated, analyses reported below represent 2 x 2 (Type A-B x Task Difficulty) analyses of variance.⁴ Because some subjects failed to complete all items, degrees of freedom vary slightly.

Manipulation Effectiveness

Analysis of the average number of anagrams solved per set indicated only a reliable effect for Task Difficulty ($F(1,72) = 222.50, p < .001$). Subjects attempting easy anagrams solved substantially more anagrams per set ($M = 6.66$) than subjects attempting difficult anagrams ($M = 1.92$). Analyses of perceived quality of performance, and satisfaction with performance, indicated that subjects who attempted easy anagrams perceived the quality of their performances to be higher ($M = 5.59$), and were more satisfied with their performances ($M = 5.62$), than subjects who attempted difficult anagrams (quality: $M = 2.63, F(1,64) = 110.24, p < .001$; satisfaction: $M = 3.25, F(1,64) = 55.14, p < .001$). The manipulation of anagram difficulty was clearly effective in creating success and failure experiences, and these experiences were not different for Type As and Bs.

Performance Attributions

Subjects rated ability and effort with regard to whether it helped versus hindered performance. These means are reported in

Table 1. As is evident, subjects attempting easy anagrams perceived each causal source as helping performance to a greater degree than did subjects attempting difficult anagrams. More importantly, effort attributions were found to depend on both task difficulty and Type A behavior. Compared to Type Bs, Type As were more likely to claim that effort hindered their performance when they failed. These results would appear to indicate that Type As are more self-blaming than Type Bs following failure. These findings, however, like those from past studies, do not take into account possible differences in the way Type As and Bs perceive the causal structure of causal sources.

Insert Table 1 about here

Table 2 contains the attributional dimension ratings for ability and effort. Compared to Type Bs, Type As considered ability to be more internal and more stable following success but less internal and less stable following failure.⁵ In other words, Type As were more reluctant to consider ability to be a stable, internal characteristic after failure than after success. Type Bs, by contrast, were more willing to consider ability to be an internal and stable characteristic following failure than following success. This suggests that when Type As claim that ability hinders performance, it may be inappropriate to consider this self-blame in the classic sense. Rather, Type As construe

ability in a self-serving manner. Type As also rated effort as less stable following failure than success, whereas Type Bs exhibited an opposite pattern. Thus, although Type As rated effort as hindering their performance more following failure compared to Type Bs, they also interpreted effort in a way that rendered it less damaging: It is unlikely to be the same in the future. Note also that there was a nonsignificant tendency for Type As to consider effort as more internally determined following success than following failure. Taken together, these results provide support for the hypothesis that Type As and Bs differ in their interpretations of the dimensional structure underlying the causes for their performance, with Type As' interpretations being more self-serving.

Insert Table 2 about here

Attribution Composite

Additional insight into the manner in which Type As and Bs diverge in their perceptions of causal sources can be gained by forming a composite index based on the attributional ratings. Within each causal source, dimensional ratings were combined so that high scores reflect external, unstable and specific causes. This type of composite should help identify the overall self-serving nature of attribution use, particularly when the pattern for the individual ratings for a specific source are

similar (as is the case for effort).

The causal source composites are listed in Table 3, where it can be seen that Type As exhibited a distinctly more self-serving interpretation of the ability and effort causal sources than did Type Bs.

Insert Tables 3 and 4 about here

Analyses of importance ratings indicated no reliable differences.

Discussion

Past research suggests conflicting views on how Type As and Bs diverge in their performance attributions, particularly following failure. Whereas Brunson and Matthews (1981) and Musante et al. (1984) found Type As to be more likely than Type Bs to blame failure on "internal" factors such as ability and effort, Strube and Boland (1986) and Strube et al. (in press) found Type As to be more likely than Type Bs to blame failure on external factors, and success on internal factors. The key difference between these studies is in the manner in which attributions were measured. Brunson and Matthews (1981) and Musante et al. (1984) used a causal source approach whereas Strube et al. used a causal dimension approach. In light of past research indicating situational and individual differences in the dimensionalization of causal sources, this methodological difference suggests that

the divergent ability and effort attributions exhibited by Type As and Bs may stem from fundamentally different interpretations of their dimensional structure. In particular, it was hypothesized that Type As would be more likely than Type Bs to construe the dimensional structure of ability and effort in ways that are self-serving.

Results provided support for this hypothesis. First, it was demonstrated that Type As and Bs diverged in their use of effort attributions in ways that resemble past research: Type As appeared to blame themselves more following failure than did Type Bs. However, the dimensional ratings indicated that Type As, more than Type Bs, considered effort to be unstable following failure reflecting a belief that it could change on future occasions, rendering the effort attribution less damaging. In a similar manner, Type As were more likely than Type Bs to perceive the dimensional structure of ability in a self-serving manner. Type As perceived ability to be less internal and less stable following failure than following success; Type Bs exhibited an opposite pattern. Although Type As didn't blame failure on ability to a greater degree than Type Bs, these findings indicate that when they do choose such an attribution, their interpretation of the dimensional structure of that causal source renders it less damaging. Taken together, the present findings suggest that Type As may be quite strategic in their use of attributions. When they succeed, they argue for the internal stable operation of effort

and ability. By contrast, when Type As fail, they deny the internal, stable operation of effort and ability.

The present results may also help clarify results from three additional studies on the attributions made by Type As and Bs. Rhodewalt (1984), Strube (1985), and Furnham, Hillard, and Brewin (1985) have all investigated the attributional styles of Type As and Bs. These studies diverge from those discussed previously in that Type As and Bs are asked to form attributions for hypothetical, not actual, outcomes. Rhodewalt (1984) and Strube (1985) both used the Attributional Style Questionnaire to examine the dimensional structure of attributions for positive and negative outcomes. Rhodewalt (1984) found that Type As and Bs did not differ in their attributions for positive outcomes but that Type As blamed themselves more for negative outcomes. Strube (1985) found Type As to take more credit for success and less credit for failure compared to Type Bs. Furnham et al. (1985) also asked Type As and Bs to provide attributions for hypothetical outcomes. In this case, however, all outcomes were negative but varied in their controllability. Furnham et al. found that Type As were more likely than Type Bs to claim that their actions produced uncontrollable failure. On the face of it, the results of these studies appear difficult to reconcile. The present results suggest a possible solution. Take, for example, the Rhodewalt (1984) and Strube (1985) studies. These studies appear to contradict each other. It is possible that the subjects in

these studies specified different types of idiosyncratic causes, and that were these taken into account, the results might make more sense. For example, subjects in Strube's study may have specified causes that are ordinarily considered internal, and thus Type As claimed they were less responsible for these following failure (as with effort and ability in the present study). By contrast, subjects in Rhodewalt's study may have specified causes that are ordinarily considered less internal, and thus expressed a belief that they could control these following failure (as with task difficulty and chance in the present study). Furnham et al.'s study is consistent with this latter explanation as well in that Type As expressed a greater belief that their actions could control outcomes ordinarily outside their control. Of course, these interpretations are only speculation; it is unknown whether the subjects in Rhodewalt's and Strube's studies specified different types of causes. The divergence of those results, however, in the context of the present findings underscores a crucial point: A clear understanding of the attributions made by Type As and Bs requires knowledge of the specific attribution made (i.e., source) and the manner in which that causal source's dimensional structure is understood.

Finally, it is useful to consider the present findings in the context of theoretical formulations of Type A behavior. Perhaps the most popular model has been proposed by Glass (1977) who has suggested that Type A behavior is a style of coping with

environmental stress with the intent of maintaining or regaining control over the environment. This view has been well supported (see Matthews, 1982). For example, compared to Type Bs, Type As report a greater desire for control (e.g., Dembroski, MacDougall & Musante, 1984), are more reluctant to share control with others (e.g., Strube & Werner, 1985), and are more reactive to control threat (e.g., Rhodewalt & Davison, 1983). The present results are likewise consistent with this view. By strategically formulating attributions in such a way as to foster the belief that they can bring about positive outcomes and avoid negative outcomes, Type As enhance their perceptions of control and competence (see Weary-Bradley, 1978, for a similar argument regarding the general self-serving bias). This greater self-serving bias may have negative consequences as well, however. Type As may fail to realize that they lack abilities in some domain, or fail to appropriately generalize that belief. Consequently they may continue to strive when unnecessary, resulting in a greater accumulation of stress. Indeed, Strube (in press) has argued that Type As desire an accurate appraisal of their abilities and may be particularly reluctant to assume a lack of abilities in a new situation without first performing a behavioral test.

The presence of a more robust self-serving bias among Type As has important consequences for their experience of stress. It also has important implications for theoretical accounts of Type As and Bs. Attempts to integrate this bias into theoretical

models, and examination of the implications of this bias in relation to coping strategies exhibited by Type As are important tasks for future research. More generally, the present findings underscore the need to examine the meaning underlying the use of causal sources and the importance of recognizing that individual differences may moderate causal structure interpretations. Accordingly, the present study provides a general methodology for examining how individuals vary in the meaning they attach to different causal sources.

References

- Abramson, L. Y., Garber, J., & Seligman, M. E. P. (1980). Learned helplessness in humans: An attributional analysis. In J. Garber & M. E. P. Seligman (Eds.), Human helplessness: Theory and applications. New York: Academic Press.
- Anderson, C. A. (1983). The causal structure of situations: The generation of plausible causal attributions as a function of type of event situation. Journal of Experimental Social Psychology, 19, 185-203.
- Becker, M. A., & Byrne, D. (1984). Type A behavior and daily activities of young married couples. Journal of Applied Social Psychology, 14, 82-88.
- Betancourt, H., & Weiner, B. (1982). Attributions for achievement-related events, expectancy, and sentiments: A study of success and failure in Chile and the United States. Journal of Cross-Cultural Psychology, 13, 362-374.
- Brand, R. J. (1978). Coronary-prone behavior as an independent risk factor for coronary heart disease. In T. M. Dembroski et al. (Eds.), Coronary-prone behavior (pp. 11-24). New York: Springer-Verlag.
- Brunson, B. I., & Matthews, K. A. (1981). The Type A coronary-prone behavior pattern and reactions to uncontrollable stress: An analysis of performance strategies, affect, and attributions during failure. Journal of Personality and Social Psychology, 40, 906-918.

Contrada, R. J., Wright, R. A., & Glass, D. C. (1985).

Psychophysiologic correlates of Type A behavior: Comments on Houston (1983) and Holmes (1983). Journal of Research in Personality, 19, 12-30.

Dembroski, T. M., MacDougall, J. M., & Musante, L. (1984).

Desirability of control versus locus of control: Relationship to paralinguistics in the Type A interview. Health Psychology, 3, 15-26.

Dembroski, T. M., Weiss, S. M., Shields, J. L., Haynes, S. G., & Feinleib, M. (Eds.) (1978). Coronary-prone behavior. New York: Springer-Verlag.

Elig, T. W., & Frieze, I. H. (1979). Measuring causal

attributions for success and failure. Journal of Personality and Social Psychology, 37, 621-634.

Feather, N. T., & Simon, J. G. (1971). Attribution of

responsibility and valence of success and failure in relation to initial confidence and task performance. Journal of Personality and Social Psychology, 18, 173-188.

Feather, N. T., & Simon, J. G. (1971). Causal attributions for

success and failure in relation to expectations of success based upon selective or manipulative control. Journal of Personality, 39, 527-541.

Furnham, A., Hillard, A., & Brewin, C. R. (1985). Type A behavior

pattern and attributions of responsibility. Motivation and Emotion, 9, 39-51.

- Glass, D. C. (1977). Behavior patterns, stress, and coronary disease. Hillsdale, NJ: Erlbaum.
- Krantz, D. S., Glass, D. C., & Snyder, M. L. (1974). Helplessness, stress level, and the coronary-prone behavior pattern. Journal of Experimental Social Psychology, 10, 284-300.
- Krantz, S. E., & Rude, S. (1984). Depressive attributions: Selection of different causes or assignment of dimensional meanings. Journal of Personality and Social Psychology, 47, 193-203.
- Lau, R. R., & Russell, D. (1980). Attributions in the sports pages. Journal of Personality and Social Psychology, 39, 29-38.
- Matthews, K. A. (1982). Psychological perspectives on the Type A behavior pattern. Psychological Bulletin, 91, 293-323.
- Matthews, K. A., & Brunson, B. I. (1979). Allocation of attention and the Type A coronary-prone behavior pattern. Journal of Personality and Social Psychology, 37, 2081-2091.
- Matthews, K. A., & Haynes, S. G. (1986). Type A behavior pattern and coronary disease risk: Update and critical evaluation. American Journal of Epidemiology, 123, 923-960.
- Matthews, K. A., Krantz, D. S., Dembroski, T. M., & MacDougall, J. M. (1982). Unique and common variance in the Structured Interview and Jenkins Activity Survey measures of the Type A behavior pattern. Journal of Personality and Social Psychology, 42, 303-313.

- Meyer, J. P. (1980). Causal attributions for success and failure: A multivariate investigation of dimensionality, formation, and consequences. Journal of Personality and Social Psychology, 38, 704-718.
- Meyer, J. P., & Koelbl, S. L. M. (1982). Students' test performance: Dimensionality of causal attributions. Personality and Social Psychology Bulletin, 8, 31-36.
- Musante, L., MacDougall, J. M., & Dembroski, T. M. (1984). The Type A behavior pattern and attributions for success and failure. Personality and Social Psychology Bulletin, 10, 544-553.
- Musante, L., MacDougall, J. M., Dembroski, T. M., & Van Horn, A. E. (1983). Component analysis of the Type A coronary-prone behavior pattern in male and female college students. Journal of Personality and Social Psychology, 45, 1104-1117.
- Ostrove, N. (1978). Expectations for success on effort-determined tasks as a function of incentive and performance feedback. Journal of Personality and Social Psychology, 36, 909-916.
- Review Panel on Coronary-Prone Behavior and Coronary Heart Disease (1981). Coronary-prone behavior and coronary heart disease: A critical review. Circulation, 63, 1199-1215.
- Rhodewalt, F. (1984). Self-attribution, self-involvement, and the Type A coronary-prone behavior pattern. Journal of Personality and Social Psychology, 47, 662-670.

- Rhodewalt, F., & Davison, J., Jr. (1983). Reactance and the coronary-prone behavior pattern: The role of self-attribution in response to reduced behavioral freedom. Journal of Personality and Social Psychology, 44, 220-228.
- Ronis, D. L., Hansen, R. D., & O'Leary, V. E. (1983). Understanding the meaning of achievement attributions: A test of derived locus and stability scores. Journal of Personality and Social Psychology, 44, 702-711.
- Russell, D. (1982). The causal dimension scale: A measure of how individuals perceive causes. Journal of Personality and Social Psychology, 42, 1137-1145.
- Sanders, G. S., & Malkis, F. S. (1982). Type A behavior, need for control, and reactions to group participation. Organizational Behavior and Human Performance, 30, 71-86.
- Strube, M. J. (1985). Attributional style and the Type A coronary-prone behavior pattern. Journal of Personality and Social Psychology, 49, 500-509.
- Strube, M. J. (in press). A self-appraisal model of the Type A behavior pattern. In R. Hogan & W. Jones (Eds.), Perspectives in personality: Theory, measurement and interpersonal dynamics. Greenwich, CT: JAI Press.
- Strube, M. J., & Boland, S. M. (1986). Post-performance attributions and task persistence among Type A and B individuals: A clarification. Journal of Personality and Social Psychology, 50, 413-420.

- Strube, M. J., Boland, S. M., Manfredo, P. A., & Al-Falaij, A. (in press). Type A behavior pattern and the self-evaluation of abilities: Empirical tests of the self-appraisal model. Journal of Personality and Social Psychology.
- Strube, M. J., Turner, C. W., Patrick, S., & Perrillo, R. (1983). Type A/B attentional responses to aesthetic stimuli: Effects on mood and performance. Journal of Personality and Social Psychology, 45, 1369-1379.
- Strube, M. J., & Werner, C. (1985). Relinquishment of control and the Type A behavior pattern. Journal of Personality and Social Psychology, 48, 698-701.
- Valle, V. A., & Frieze, I. H. (1976). Stability of causal attributions as a mediator in changing expectations for success. Journal of Personality and Social Psychology, 33, 579-587.
- Weary-Bradley, G. (1978). Self-serving biases in the attribution process: A re-examination of the fact or fiction question. Journal of Personality and Social Psychology, 36, 56-71.
- Weiner, B. (1972). Theories of motivation: From mechanism to cognition. Chicago: Rand McNally.
- Weiner, B. (Ed.) (1974). Achievement motivation and attribution theory. Morristown, NJ: General Learning Press.
- Weiner, B. (1979). A theory of motivation for some classroom experiences. Journal of Educational Psychology, 71, 3-25.

- Weiner, B., Nierenberg, R., & Goldstein, M. (1976). Social learning (locus of control) versus attribution (causal stability) interpretations of expectancy of success. Journal of Personality, 44, 52-68.
- Wright, R. A., Contrada, R. J., & Glass, D. C. (1985). Psychophysiologic correlates of Type A behavior. In E. S. Katkin & S. B. Manuck (Eds.), Advances in behavioral medicine. Greenwich, CT: JAI Press.
- Zyzanski, S. J. (1978). Coronary-prone behavior pattern and coronary heart disease: Epidemiological evidence. In T. M. Dembroski et al. (Eds.), Coronary-prone behavior (pp. 25-40). New York: Springer-Verlag.

Footnotes

¹Three other studies (Furnham, Hillard, & Brewin, 1985; Rhodewalt, 1984; Strube, 1985) have examined Type A and B attributions to hypothetical outcomes. The relevance of these results for untangling the manner in which Type As and Bs make attributions for actual outcomes is unclear. This issue will be treated at greater length in the discussion.

²Two limitations must be kept in mind, however. Because subjects were required to verbalize their thoughts during the task, Type As and Bs may have experienced subjectively different failure experiences. Type As have been found to exhibit a focused attention style when engaged in a task (e.g., Matthews & Brunson, 1980; Strube, Turner, Patrick, & Perrillo, 1983). Thus Type As may have been more distracted during the task than Type Bs and experienced more subjective failure. Also, because the successful trials occurred during training, success and failure could not be counterbalanced and comparisons of success and failure attributions must be made with caution.

³These results were obtained only when Type A behavior was assessed using the Jenkins Activity Survey (JAS) but not when the Structured Interview (SI) was used for classification. This divergence in results is not unusual (see Matthews, 1982) and suggests that the JAS may be more closely linked to psychological processes. By contrast, it has been suggested that the SI may measure a predisposition toward behavioral and physiological

reactivity (e.g., Matthews, 1982; Strube, in press).

⁴Because Type A-B classification was carried out at the end of the study (so experimenters would remain blind to Type A-B status), there were unequal numbers of subjects in conditions: Type A - Success ($\underline{n} = 19$), Type A - Failure ($\underline{n} = 20$), Type B - Success ($\underline{n} = 20$), Type B - Failure ($\underline{n} = 17$). Nonorthogonality in the analyses was adjusted by only testing for significance those components of variance that contributed uniquely to prediction of the dependent measures.

⁵For all significant interactions, post hoc pairwise mean comparisons are also provided. The reader should bear in mind that these comparisons provide a conservative test of mean differences and are included so that all possible pairwise comparisons may be examined without undue inflation of the Type I error. The hypothesized pattern of mean differences requires consideration of all means and is tested by the interaction component.

Table 1

Rated Influence of Causal Sources as a Function of Task Difficulty and the Type A Behavior Pattern

Causal Source	Easy Task		Difficult Task		Task Difficulty	<u>F</u> (1,72)	
	Type As	Type Bs	Type As	Type Bs		Type A-B	Interaction
Ability	1.89	2.40	4.05	4.41	48.60***	2.10	.06
Effort	2.42 _b	2.85 _b	4.30 _a	3.35 _b	14.50***	.68	4.84*

Note. Higher means indicate the perception that the causal source was viewed as hindering performance. Means with different subscripts are significantly different by the Newman-Keuls procedure ($p < .05$, pairwise mean differences tested only if interaction was significant).

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.

Dimensional Ratings for Each Causal Source as a Function of Task Difficulty, and the Type A Behavior Pattern.

Causal Source	Causal Dimension	Easy Task		Difficult Task		<u>F</u> (1,72)		
		Type As	Type Bs	Type As	Type Bs	Task Difficulty	Type A-B	Interaction
Ability	Internality	2.10 _b	3.30 _a	2.60 _{a,b}	2.53 _{a,b}	.25	4.18*	5.29*
	Stability	3.32 _a	4.35 _a	4.50 _a	3.76 _a	.50	.12	4.36*
	Generality	4.63	4.80	2.85	2.88	21.18***	.06	.03
Effort	Internality	1.74	2.55	2.50	2.41	1.17	1.57	2.43
	Stability	4.05 _{a,b}	4.20 _{a,b}	5.20 _a	3.41 _b	.19	4.07*	5.66*
	Generality	4.47	4.30	2.15	3.53	12.75***	1.94	3.21

Note. Higher means represent less internality, less stability, and more generality. Means with different subscripts are significantly different by the Newman-Keuls procedure ($p < .05$, pairwise mean differences tested only if interaction was significant).

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3

Causal Source Composites as a Function of Task Difficulty and the Type A Behavior Pattern

Causal Source	Easy Tasks		Difficult Tasks		Task Difficulty	<u>F</u> (1,72)	
	Type As	Type Bs	Type As	Type Bs		Type A-B	Interaction
Ability	8.79 _b	10.85 _a	12.25 _a	11.41 _a	8.15**	.75	4.24*
Effort	9.32 _b	10.45 _b	13.55 _a	10.29 _b	8.12	2.20	9.41*

Note. Composite range = 3 - 21. Higher means indicate less internality, less stability, and less generality. Ratings for generality were reversed prior to forming composite. Means with different subscripts are significantly different by the Newman-Keuls procedure ($p < .05$).

* $p < .05$, ** $p < .01$